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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/642,439

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John H. Brophy

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07/22/2008

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EXAMINER

MCDONOUGH, JAMES E

ART UNIT

PAPER NUMBER

1793

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/642,439	Applicant(s) BROPHY ET AL.	
	Examiner JAMES E. MCDONOUGH	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7-9,11,24,28,32,34-43 and 45-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7-9,11,24,28,32,34-43 and 45-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/30/23008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Original Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, 47, and 49-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Tonkovich et al. (USP 6,488,838).

Although, Haswell et al. does not teach a microchannel with one wall that is adjacent to a heat transfer microchannel, Haswell et al. does teach using nickel and palladium (column 1, paragraph 1) with a Schiff base ligand that has oxo bridges and is chiral and tethered to a support (scheme1) wherein the support beads are porous

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(column 4, paragraph 6) and that heat transfer is improved in microreactors, but is silent as to how this heat transfer is achieved. However, because Tonkovich et al. teaches that when using microreactors with microchannels, a conventional way to achieve heat transfer is to arrange a heat transfer microchannel adjacent to a reactor microchannel (column 6, lines 36-38), it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to, modify the teachings of Haswell et al., by incorporating a heat transfer microchannel adjacent to a reactor microchannel to facilitate heat transfer, as suggested by Tonkovich et al.

Although, Haswell is silent as to having a bulk flow because, Tonkovich teaches a bulk flow path, use with microreactors, it would have been prima facie obvious to one of ordinary skill in the art to select to use either a bulk flow path or a non-bulk flow path depending on the reaction to be carried out, and the skilled artisan would be expected to be able to select whether or not to use a bulk flow path to optimize the reactor conditions as this would be routine experimentation.

Claims 28, 32, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Tonkovich et al. (USP 6,488,838) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, 47, and 49-53 above, and further in view of Hoveyda et al. (US 2004/0019212).

Although, Haswell et al. and Tonkovich et al. do not explicitly disclose a dendritic catalyst, they do teach the rest of the limitations of the instant claims. However, because Hoveyda et al. teaches the use of chiral organometallic/transition metal

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complex that can be in monomeric, polymeric, or dendritic form are stable and recyclable showing superior activity and stereoselectivity, it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teachings of Haswell et al., Tonkovich et al. and Hoveyda et al. with reasonable expectation of success and the expected benefit of catalyst reactors with high selectivity and stereoselectivity.

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Tonkovich et al. (USP 6,488,838) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, 47, and 49-53 above, and further in view of Kang (US Patent No. 3,993,855).

Although, Haswell et al. and Tonkovich et al. do not explicitly disclose the specific Ni, Rh, or Ir catalyst, they do teach the rest of the limitations of the instant claims. However, because Kang teaches the use of $\text{RhH}(\text{CO}(\text{PPh}_3)_3)$ and that it provides selective hydrogenation (column 1, lines 41-45), it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teachings of Kang with that of Haswell et al. and Tonkovich et al. with a reasonable expectation of success and the expected benefit of forming a selective catalyst system.

Claims 43, 45, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of

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Tonkovich et al. (USP 6,488,838) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, 47, and 49-53 above, and further in view of Chapman, Jr. et al. (US 2002/0182603).

Although, Haswell et al. and Tonkovich et al. do not explicitly disclose the chloro propyl silanes/amines, they do teach the rest of the limitations of the instant claims. However, because Chapman, Jr. et al. teaches the use of chloropropylsilane and amino propyl linkers that link a substrate with a support and that such substrate surfaces feature a uniform distribution of attachment functionality (abstract, scheme 1, and paragraph 0039), it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teachings of Chapman, Jr. with that of Haswell et al. and Tonkovich et al. with a reasonable expectation of success and the expected benefit of uniform distribution of catalyst moieties.

Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Tonkovich et al. (USP 6,488,838) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, 47, and 49-53 above, and further in view of Ostojca-Starzewski et al. (US 2003/0036474).

Although, Haswell et al. and Tonkovich et al. do not explicitly disclose the use of metallocene, they do teach the rest of the limitations of the instant claims. However, because Ostojca-Starzewski et al. teaches the use of tethered (linked) metallocenes and that these catalyst allow the formation of defect free polyethylene to a degree not achieved with conventional catalyst, it would have been obvious to someone of ordinary skill in the art at the time of the invention was made to combine the teachings of Ostojca-

Starzewski et al. with that of Haswell et al. and Tonkovich et al. with a reasonable expectation of success and the expected benefit of forming a catalyst that can produce defect free polyethylene.

Response to Arguments

Applicants argue that Haswell teaches away for the invention because Haswell teaches that “In the constraints of the microreactor, where the beads are packed in a capillary, the reactive solution is driven through the pores under pressure and the number of catalytic sites available for reaction is increased”. This is not persuasive as the examiner can in no way see how this teaches away from the invention, applicants are reminded that for a reference to teach away there must be some teaching or suggestion that the combination will not work, and applicants have failed to provide any such teaching nor has examiner found any.

Applicants argue that Haswell does not teach the claimed bulk flow path. This is not persuasive and applicants are respectfully requested to reread the rejection where it will be clearly seen that the motivation for the bulk flow path comes from Tonkovich and not from Haswell.

Applicants argue that since both the applicants and the reference of Haswell use the Knoevenagel reaction, that this makes their declaration fully commensurate in scope. This is not persuasive because the instant invention teaches any catalyst, and

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other than mere allegation applicants have provided no reasoning that the skilled artisan would believe that if some conditions work better for the Knoevenagel reaction, that it will be better for all catalytic reactions. It is further noted that the Knoevenagel reaction does not produce a chiral product, but some of the claims call for chiral catalyst, which would be expected to be used for making chiral compounds.

Applicants argue that the two ways to show unobviousness is 1.) Teaching away and 2.) Unexpected results. This is not persuasive because: 1.) To teach away there must be some teaching or suggestion that the combination will not work. 2.) Since the combination references teach the use of a bulk flow path, it is not understood how these results are unexpected.

Applicants argue that Hoveyda does not teach a chiral auxiliary, even though Hoveyda teaches the use of chiral catalyst and offer a wikipedia entry for its definition which is in part below:

“Chiral auxiliaries are optically active compounds and introduce chirality in otherwise racemic compounds. The temporary stereocenter then forces the asymmetric formation of a second stereocenter using steric hindrance or directing groups to determine chirality. After the creation of the second stereocenter the original auxiliary can be removed in a third step and recycled.”

Based on this definition a chiral catalyst is a chiral auxiliary, as it is optically active and induces chirality into non-chiral compounds, whereby the stereocenter of the auxiliary

help to create chirality in the substrate, and after this they are removed and recycled, and a catalyst is recycled after it is separated from the substrate, or it would not be a catalyst.

Applicants submit a declaration in an attempt to show unexpected results.

Applicants in paragraphs 4 and 5 try to compare the two different types of flow. This is not persuasive because the conditions are not close enough in the two examples to see if the increase is due solely to the type of flow. It is also noted again for applicants that the rejection was a combination and had motivation for using a bulk flow path, and applicants have not argued against this.

Applicants argue that the chiral catalyst of Hoveyda is not a chiral auxiliary. This is not persuasive because based on the wikipedia definition of chiral auxiliary, a chiral catalyst reads on a chiral auxiliary.

Conclusion

This is a continuation of applicant's earlier Application No. 10/642,439. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES E. MCDONOUGH whose telephone number is (571)272-6398. The examiner can normally be reached on 8:30am-5:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerry A Lorengo/
Supervisory Patent Examiner, Art Unit 1793

JEM 6/16/2008

Application Number 	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/642,439	BROPHY ET AL.	
	Examiner	Art Unit	
	JAMES E. MCDONOUGH	1793	